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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DANG, PHUC T	

ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SPM

Office Action Summary	Application No.	Applicant(s)	
	10/786,239	CHO ET AL.	
	Examiner	Art Unit	
	PHUC T. DANG	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-20* is/are allowed.

6)☒ Claim(s) *1,2 and 6* is/are rejected.

7)☒ Claim(s) *3-5,7 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath/declaration filed on February 24, 2004 is acceptable.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The specification is objected to because of the following reasons:

In specification, line 9, a phrase "... the second oxide film 16..." should amend to -- ... the second oxide film 18... --.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levin in view of Kim (U.S. Patent No. 6,861,699 B2).

Regarding claim 1, Kim discloses a method of manufacturing a non-volatile semiconductor memory device comprising:

forming a dielectric layer pattern having an ONO composition (103, 104, 105, Fig. 9B) on a substrate (10, Fig. 9B);

forming a polysilicon layer (106, Fig. 9B) on the substrate (100, Fig. 9B) including over the dielectric layer pattern;

patterning the polysilicon layer (106, Fig. 9B) to form a polysilicon layer pattern on the

dielectric layer pattern, wherein the polysilicon layer pattern has a split structure (Fig. 9 C) that exposes a portion of the dielectric layer pattern;

etching the exposed portion of the dielectric layer pattern (103, 104, 105, Fig. 9C); and

subsequently implanting impurities into the substrate to form source/drain regions (151, 152, Fig. 9G) in the substrate (100, Fig. 9G).

Patterning the polysilicon layer to form a polysilicon layer pattern after patterning the dielectric layer. Thus, patterning the polysilicon layer is obviously patterning the dielectric layer for a purpose of improving the non-volatile semiconductor memory as claimed in claim 1 above.

Regarding claim 2, Kim discloses the step of forming of the dielectric layer pattern comprises forming a first oxide film having a thickness of about 20 to about 100 Angstroms on

the substrate, forming a nitride film having a thickness of about 20 to about 100 Angstroms on the first oxide film, forming a second oxide film having a thickness of about 20 to about 100 Angstroms on the nitride film, forming an etching mask on the second oxide film, and etching the second oxide film, the nitride film and the first oxide film using the etching mask [Figs. 9A-9G and col. 8, lines 39-51]].

Regarding claim 6, Kim discloses a step of implanting of ions comprises a first implantation process using the polysilicon layer pattern as a mask to form a source region in the substrate having a vertical profile and a width substantially identical to the width of the exposed portion of the dielectric layer [Fig. 9G].

Allowable Subject Matter

5. Claims 9-20 would be allowed.

The following is a statement of reason for the indication of allowable subject matter:

Claims 9-20 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest the claimed invention having a step of subsequently implanting ions into the substrate using the polysilicon layer pattern and the spacer as a mask to form lightly doped drain (LDD) structure as cited in claim 9 and a step of etching of the exposed portion of the dielectric layer pattern comprises removing only some of the entire thickness of the exposed portion of the dielectric layer pattern, wherein a remainder of the portion of the dielectric layer pattern, exposed by the split polysilicon layer pattern, is left on the substrate as cited in claim 15.

Claims 3-5, and 7-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

None of the prior art made of record does not disclose a step of forming a gate oxide film on the substrate by oxidizing a surface of the substrate after the dielectric layer pattern is formed as cited in claim 3 and a step of oxidizing a surface of the polysilicon

layer pattern as cited in claim 4 and a step of etching of the exposed portion of the dielectric layer pattern comprises removing only some of the entire thickness of the exposed portion of the dielectric layer pattern, wherein a remainder of the portion of the dielectric layer pattern, exposed by the split polysilicon layer pattern, is left on the substrate as cited in claim 5 and the step of implanting of ions comprises forming preliminary source/drain regions at portions of the substrate exposed by the polysilicon layer pattern, subsequently forming a nitride layer on the substrate including over the polysilicon layer pattern, etching back the nitride layer to form a spacer on a sidewall of the

polysilicon layer pattern, and subsequently forming lightly doped drain (LDD) structures using the polysilicon layer pattern and the spacer as a mask as cited in claim 7.

Claim 8 is depend on claim 7, then, it also would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.

8. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang PD

Primary Examiner

Art Unit 2818